

Abstract of the Disclosure

A voltage regulator for supplying two types of loads on a common chip, namely a high current load and a low current load. The voltage regulator employs a feedback loop to supply the low current load with a fine degree of regulation and a feed forward arrangement to supply the high current load with a coarse degree of regulation. The feedback loop employs a bandgap reference source feeding a comparator, with an output driver transistor drawing current from a common supply and having an output electrode connected to a voltage divider, allowing a sample of the output to be fed back to the comparator to maintain the desired output voltage. The output electrode also feeds a control transistor for the feed forward arrangement that also draws current from the common supply and supplies the high current load directly. An example of a single chip circuit employing the present invention is a charge pump where the high current load is a series of large capacitors used to multiply charge to produce a high voltage and the low current load is a plurality of clock circuits that apply timing pulses to switches for proper phasing of the capacitors and associated switches to achieve the desired high voltage.

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